



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,985	10/06/2003	Dzhakhangir V. Khaydarov	04379/000M882-US0	4773
7278	7590	10/17/2007	EXAMINER	
DARBY & DARBY P.C. P.O. BOX 770 Church Street Station New York, NY 10008-0770			VAN ROY, TOD THOMAS	
ART UNIT		PAPER NUMBER		
2828				
MAIL DATE		DELIVERY MODE		
10/17/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/679,985	KHAYDAROV, DZHAKHANGIR V.
	Examiner	Art Unit
	Tod T. Van Roy	2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 18 September 2007.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 13-24, 26 and 28 is/are allowed.
- 6) Claim(s) 1-12¹⁵ is/are rejected.
- 7) Claim(s) 27 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments, see Remarks, filed 09/18/2007, with respect to the rejection(s) of claim(s) 1, 13, and 28 under USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

The Examiner agrees with the Applicant that the combination of Del Corno with Il'chev is not obvious as the recovery time of the saturable absorber (SA) of Il'chev would not allow for passive mode-locking when used in the system of Del Corno.

The Examiner further agrees with the Applicant that Bai does not teach the SA to be movable between elements, but rather to be adjustable within a fixed axis by itself.

Claim Objections

Claim 1 is objected to because of the following informalities:

The "can" language used in claim 1 can be interpreted as being indefinite. As written, the variable position of the SA and output pulse adjustment are optional limitations.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Khaydarov (US 6546027).

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claims 1, 5, and 7, Khaydarov discloses a laser defining a cavity, the cavity housing a proximal reflective surface (fig.1 14), a distal reflective surface (fig.1 18), a beam pathway there between, and, along the beam pathway, a solid-state laser medium (fig.1 Nd:YAG), a source of pulsed energy for energizing the laser medium (col.3 lines 49-2 flashlamps), means for providing an energy output from the cavity (fig.1 #38), and a beam limiting element (fig.1 #52), the laser comprising: a passive negative feedback (PNF) element (fig.1 #74) arranged along the beam pathway; and a saturable absorber (SA) element arranged along the beam pathway (fig.1 #70) for Q-switching the laser, the SA to have a recovery time longer than an output pulse (abs.), and the SA can be positioned between different pairs of other components of the laser changing the output pulse duration (Inherent, the system

disclosed herein is the same as that being claimed, if the SA element is varied in this system the function will be that of the claimed invention; although '027 describes a fixed SA location, the system is identical, so the SA therefor **can** be varied to achieve the function).

With respect to claims 2-3, Khaydarov discloses the laser of claim 1, and teaches pulses in the 1-200ps range (col.3 lines 42-55), when in combination with the pulse variance outlined in the rejection to claim 1 above would allow for the obvious optimization of the claimed pulse duration ranges.

With respect to claim 4, Khaydarov discloses the laser of claim 1, and further teaches the output energy to be 100uJ to 2mJ (col.3 lines 42-55).

With respect to claim 6, Khaydarov discloses the laser of claim 1, and further teaches the SA element to be between the proximal reflective surface (fig.1 #14) and the means for outputting from the cavity (fig.1 #38).

With respect to claims 10-12, Khaydarov discloses the laser of claim 1, wherein the usable SA mediums are LiF:F2 and Cr4+:YAG (col.5 lines 7-17).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 8, 9, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khaydarov in view of Il'ichev et al. (Model of a passively Q-switched laser accounting nonlinear absorption anisotropy in a passive switch, Proceedings of Nonlinear Optics: Materials, Fundamentals, and Applications Topical Meeting, 113-115 (1998)).

With respect to claims 8-9, Khaydarov teaches the laser of claim 1, wherein the orientation taught by Il'ichev comprises orientations between a first and second angle relative to a polarization of the beam in the beam pathway (fig.3d, approx. 0-45 degrees relative to the optical axis). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Khaydarov with the orientation variance of Il'ichev in order to adjust the output pulse length.

With respect to claim 25, Khaydarov and Il'ichev teach the laser of claims 1 and 8, but do not teach the SA element to be rotatably mounted. It would have been obvious to one of ordinary skill in the art at the time of the invention to rotatably mount the SA element of Khaydarov with the orientation dependent SA of

Il'ichev in order to allow for the adjustment of the SA angle with respect to the optical axis while using a sturdy optical support structure.

Allowable Subject Matter

Claims 13-24, 26, and 28 are allowed.

Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claims 13, 28, and 27, the prior art was found to teach the larger laser system lacking either the specific SA type and/or the variability, or specific location, of the same SA. Prior art such as Khaydarov '027 taught the laser system as a whole, but failed to teach a method of varying the SA position, and likewise that the SA is positioned at a number of different locations within the cavity. US 6928090 was also found to teach the majority of the system components, but then failed to teach variability of the SA element. Prior art such as Bai was determined to teach the SA could be moved along a fixed axis, but not the variance of interchanging the position between differing optical elements within the system.

For these reasons the above stated claims are believed to be allowable.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TVR

